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1    **ORIGINAL ARTICLE**



2    **"Always read the small print": a case study of commercial  
3    research funding, disclosure and agreements  
4    with Coca-Cola**

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8    **Abstract**

9    Concerns about conflicts of interest in commercially funded research have generated  
10   increasing disclosure requirements, but are these enough to assess influence?  
11   Using the Coca-Cola Company as an example, we explore its research agreements  
12   to understand influence. Freedom of Information requests identified 87,013 pages of  
13   documents, including five agreements between Coca-Cola and public institutions in  
14   the United States, and Canada. We assess whether they allowed Coca-Cola to exercise  
15   control or influence. Provisions gave Coca-Cola the right to review research in  
16   advance of publication as well as control over (1) study data, (2) disclosure of results  
17   and (3) acknowledgement of Coca-Cola funding. Some agreements specified that  
18   Coca-Cola has the ultimate decision about any publication of peer-reviewed papers  
19   prior to its approval of the researchers' final report. If so desired, Coca-Cola can  
20   thus prevent publication of unfavourable research, but we found no evidence of this  
21   to date in the emails we received. The documents also reveal researchers can negotiate  
22   with funders successfully to remove restrictive clauses on their research. We recommend  
23   journals supplement funding disclosures and conflict-of-interest statements  
24   by requiring authors to attach funder agreements.

25    **Keywords** Coca-Cola · Research funding · Transparency · Industry funding ·  
26   Conflicts of interest

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## 27 Introduction

28 In the wake of criticisms about a lack of transparency of financial support for medical  
29 and scientific research, several multinational corporations (MNCs) recently committed to publishing relevant information on the scale and nature of their investments in research, publishing lists of projects they fund and developing principles  
30 to apply to their relationship with researchers. But are these measures sufficient to disclose the potentially complex nature of these relationships and associated contractual obligations?

31 To answer this question, we have undertaken a case study about one of the corporations that seeks to position itself at the forefront of this process, The Coca-Cola Company. The company is an appropriate example to study because, following criticism of its activities, it has published a ‘Transparency List’ of researchers whom it funded from 2010 to 2017. It also progressively refined an explicit set of principles for the researchers it funds, providing a basis for comparing its stated intentions and its practice. In 2016, it brought together its principles formally [1]. It also released the list of partnerships and research funding with an explicit statement that those researchers that it funded on the list were:

- 44 (1) “expected to conduct research that is factual, transparent and designed objectively”;
- 45 (2) to have “full control of the study design, the execution and the collection, analysis and interpretation of the data”;
- 46 (3) “encouraged to publish” and
- 47 (4) “expected to disclose their funding sources in all publications and public presentations of the data”. It added that the company did not “have the right to prevent the publication of research results” and that funding was not “conditioned on the outcome of the research”. [2]

53 These four major assertions provide a base for comparing Coca-Cola’s stated intentions to its actual practices. We see on Coca-Cola’s own website that it makes these claim around its research funded since 2010 [2](Fig. 1):

54 At least on the surface, these principles conflict with anecdotal reports of the corporation’s activities following their publication. As one example, in 2015, a *New York Times* exposé revealed that Coca-Cola designed its funding of the Global Energy Balance Network (GEBN) to divert attention from the role that sugar-sweetened beverages play in the obesity epidemic by excessively emphasising the role of lack of exercise [3]. The *Times* article asserted that Coca-Cola, just like Big Tobacco, had sought to influence public health and medical researchers, and to deploy them to promote the Company’s agenda, even though some of these researchers reported the funding to be ‘unrestricted’, meaning that it can be used for any purpose or by an organisation, rather than being given for a specific project or purpose [3, 4]. GEBN was subsequently closed in November 2015, on which Coca-Cola declined to comment [5]. A 2019 article revealed Coca-Cola’s funding of bodies like the International Life Sciences Institute in China, showing



## "Always read the small print": a case study of commercial research...

The screenshot shows a web browser with the URL <https://www.coca-colacompany.com/transparency/our-commitment-transparency>. The page displays a table of research grants and a detailed funding disclosure section.

Grant Type	Partnership	Program	Amount	Year
Trip Play	Boys & Girls Clubs of America Trip Play Program		\$850,000	2010
Trip Play Healthy Habits*	Boys & Girls Club of Fortuna		\$10,000	2010
Uninvested grant: Effect of fructose on cardiometabolic risk. Principal Investigator John Sevenster, MD, PhD.	University of Toronto		\$30,000	2010
Y Healthy Kids*	YMCA of Greater New York		\$25,000	2010
Youth Acrobatics	Jesse White Tumblers		\$40,000	2010
Youth Voice Youth Council	National 4-H Council		\$200,000	2010
e.g., e.g., (eating nutritiously, exercising regularly, and growing "taller")*	Queens Care Fertility Clinics		\$20,000	2010
Sponsored research agreement for Cardiometabolic Beverage Issues in Fluid Balance and Performance Study* Principal Investigators Dr. Tim Church, Dr. Neil Johansson	Pennington Biomedical Research Center, Louisiana State University		\$268,000	2009-2011

**\*Indicates funding from The Coca-Cola Foundation.**

**Our Approach to Funding Scientific Research:**

For our approach to funding scientific research, as described below, the researchers are expected to conduct research that is factual, transparent, and designed objectively; are expected to generate an appropriately phased hypothesis and to conduct research that will answer the relevant questions, rather than favor a particular outcome; have the right to publish their findings, the execution, and the collection, analysis and interpretation of the data; are encouraged to publish; and are expected to disclose their funding sources in all publications and public presentations of the data.

In no event does The Coca-Cola Company have the right to prevent the publication of research results. Nor does The Coca-Cola Company provide funding conditioned on the outcome of the research.

**Research Partnerships Excluded:**

1. Research by entities not based in the U.S. or Canada and not funded by Coca-Cola North America (CCNA) or The Coca-Cola Company's U.S. corporate headquarters to entities based in the U.S. or Canada for research relating to dietary intake, nutrition, and health or to physical activity; and

2. Research by entities not based in the U.S. or Canada and not funded by CCNA or The Coca-Cola Foundation or The Coca-Cola Company's U.S. corporate headquarters to entities based in the U.S. for health and well-being programs and communication activities conducted in the U.S.

**Research and Partnerships Excluded:**

1. Research by entities not based in the U.S. or Canada and not funded by CCNA or The Coca-Cola Company's U.S. corporate headquarters;

2. Research by entities not based in the U.S. or Canada and not funded by CCNA or The Coca-Cola Foundation or by The Coca-Cola Company's U.S. corporate headquarters;

3. Research on ingredients, packaging, products or brands that is not related to dietary intake, nutrition and health or to physical activity;

4. Research on health and well-being programs and communications activities;

5. Payments to third party service providers for media services, advertising and logistics in support of the "partnership" for health and well-being programs and communications activities listed.

For purposes of this list, we use the term "partnership" in an informal sense, referring to our relationship with entities based in the U.S. that have received funding from Coca-Cola North America (CCNA), The Coca-Cola Foundation or The Coca-Cola Company's U.S. corporate headquarters to support their health and well-being programs and communications activities conducted in the U.S. through Jan. 1, 2010 through June 30, 2010. Amounts for July 1, 2010 forward will be disclosed in a future update.

Fig. 1 [2]

69 how the latter organisation is deployed to shape obesity science and related policy  
70 [6, 7]. A feature in the British Medical Journal suggested also that the transpar-  
71 ency list was incomplete, and highlighted how Coca-Cola acts to exercise 'soft  
72 power' by using its funding to influence everything from conferences to aca-  
73 demic positions [8]. So how can these pieces of information be reconciled? Does  
74 Coca-Cola really uphold its public commitments on research funding? Have its  
75 grants—past and present—really allowed researchers to operate free from influ-  
76 ence as Coca-Cola suggests on its website?

77 Here, we seek evidence supporting or rejecting Coca-Cola's four major  
78 research principles detailed above, using information obtained from United States  
79 (US) state and federal, as well as Australian, British, Canadian and Danish Free-  
80 dom of Information (FOI) requests for communications between Coca-Cola and  
81 leading public health academics or federal or state agency employees who were  
82 known to receive funding from or to collaborate with the company. Our FOI  
83 requests yielded a large volume of material on Coca-Cola's engagement in public  
84 health-related issues. These include five agreements between researchers or their  
85 host organisation and Coca-Cola, plus a large amount of related correspondence  
86 that enables us to assess whether these principles were being observed previously  
87 as asserted, and are now being upheld in relations with researchers. We look both  
88 at the legal (or *de jure*) aspects of the agreements and how they were operational-  
89 ised in practice in the relationships with researchers (*de facto*).



## 90 Methods

91 A non-profit consumer and public health research group in the United States, U.S.  
92 Right to Know (USRTK), based in Oakland, California, investigates the food and  
93 agrichemical industries, examining their public relations, political and lobbying  
94 campaigns, as well as the health risks associated with their products [9]. (One  
95 author, GR, is a co-director of USRTK). Drawing on the approach used in past  
96 studies of corporate behaviour and related litigation [10], between 2015 and 2018,  
97 USRTK sent 129 FOI requests to United States (US), Australian, British, Cana-  
98 dian and Danish public bodies related to Coca-Cola's links with public health  
99 actors, including academics. USRTK selected the higher education institutions  
100 because they were governed by FOI laws (that exist in many jurisdictions around  
101 the world to encourage openness and transparency by public bodies, including at  
102 the state and federal level in the US, as well as in Australia, Britain, Canada and  
103 Denmark where USRTK also sent requests), or because USRTK identified these  
104 institutions as having received funding from Coca-Cola through its recent public  
105 disclosures [2].

106 The responses yielded 87,013 pages of documents, including five research  
107 agreements made with Louisiana State University [11, 12], University of South  
108 Carolina [13], University of Toronto [14] and the University of Washington [15].  
109 The research team archived the FOI responses using document discovery soft-  
110 ware used across the legal services industry, extracted the research agreement and  
111 then two members of the research team read the documents to assess the concord-  
112 ance between Coca-Cola's principles detailed above. One of these researchers is  
113 trained as a lawyer (SS) and the other is a public health researcher (DS).

114 Inevitably, the sample has potential limitations to its external validity. First,  
115 the sample is not comprehensive, as redactions and removal of some emails  
116 from the batch are allowed in line with certain legislative exemptions, and it is  
117 impossible to ascertain whether FOI responses form a complete sample of com-  
118 munications and other contractual documents between Coca-Cola and associ-  
119 ated researchers. As with a small number of cases, quantitative study was not  
120 feasible, we thematically and legally evaluated the agreements by testing whether  
121 there existed evidence to confirm or refute Coca-Cola's four major assertions on  
122 research transparency and independence of researchers. To limit the scope for  
123 personal biases in interpretation, the entire research team engaged in reflexivity,  
124 reviewing the selection and interpretation of the source material. Second, the five  
125 research agreements pre-date Coca-Cola's publication of its transparency prin-  
126 ciples in 2016, although its own website states that all of the disclosed health and  
127 well-being research complied with these four assertions. Furthermore, several  
128 researchers themselves publicly claim that the funding had no influence on their  
129 research, which we examine more fully below [16]. Third, we report extracts as  
130 they appear in the agreements and quote any related emails "in their own words"  
131 to allow readers to assess critically our interpretations. To ensure reproducibility  
132 of our study, all agreements and cited communications are posted on Internet.



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## 133 Results

134 We summarise our findings in as they pertain to each of Coca-Cola's four major  
135 research transparency assertions [2].

136 Assertion 1 Researchers retain full control over the design, execution, analysis and  
137 interpretation of research

138 The documents obtained by FOI indicate that, although it does not have the  
139 capacity to direct and control the day-to-day conduct of studies, Coca-Cola retains  
140 varied rights throughout the research process, including the power to terminate stud-  
141 ies early without giving reasons. Several agreements reveal that the company main-  
142 tains the right to receive and comment on research prior to submission for publi-  
143 cation. However, the researchers may reject these changes. Thus, the company can  
144 influence but not direct the research output, but may use termination provisions as a  
145 mechanism to discontinue research.

146 The emails we obtained reveal that academic partners recognise Coca-Cola's  
147 influence on the research it funds, even where it is not directing the research. For  
148 example, Tommy Coggins, Director of University of South Carolina's (USC) Spon-  
149 sored Award Management and Research Compliance, in an email to Professor Tom  
150 Chandler of USC's Norman J. Arnold School of Public Health, explained that sev-  
151 eral of the research agreements entered into at the University allowed Coca-Cola to  
152 have:

153 a substantial say in how it [the research] was conducted and how results are  
154 handled, including ownership of all IP. None of this is wrong or unusual, but it  
155 is a typical industry research agreement. Also, contains a good bit of language  
156 about confidentiality and sharing results with Coca-Cola, but no bar on publi-  
157 cation [17].

158 Coggins was commenting on a study that aimed to uncover the "extent to which var-  
159 iation in total energy expenditure and variation in total energy intake contribute to  
160 changes in body weight and fat among young adults". The agreements we obtained  
161 specify that Coca-Cola's comments are non-binding unless its suggested revisions to  
162 drafts pertain to information covered in the confidentiality provisions in the agree-  
163 ment, under which Coca-Cola retains the right to redact content accordingly.

164 Taking a specific example, as part of the "Sponsored Clinical Trial Research  
165 Agreement" between Coca-Cola and the Board of Supervisors of Louisiana State  
166 University, represented by Pennington Biomedical Research Center (PBRC), we find  
167 a 2012 research agreement for a study with Timothy Church as Principal Investiga-  
168 tor related to fluid balance and performance with ad libitum water, flavoured pla-  
169 cebo or carbohydrate-electrolyte beverage intake during exercise in the heat (known  
170 henceforth as the "The APEX Study") [18]. The contract sets out mutual obliga-  
171 tions of all parties as including regular reports to and data sharing with Coca-Cola,  
172 as well as the standard termination provision, which allows Coca-Cola to retain all  
173 data. Article 6.1 specifies:



174 Publication prior to delivery of the final report of any information gained in  
175 the course of performing the Project must be in a peer reviewed journal, must  
176 be approved in writing by both parties prior to such publication, and must  
177 acknowledge that the Study was funded by The Coca-Cola Company. Notwith-  
178 standing the foregoing, the Sponsor will not be approving the content of the  
179 publication, but has a right to review and provide comment before submission  
180 for publication [12].

181 Thus, while Coca-Cola contends that its guidance is not tantamount to approval, it  
182 does retain the right to comment on papers prior to publication, and holds the ability  
183 to terminate studies at any time without reasons.

184 Indeed, Coca-Cola may simply terminate an agreement if the findings are not  
185 in its interests or if its comments and revisions are rejected. Such provisions do,  
186 however, vary amongst the research agreements we obtained. As one example, we  
187 show a “Research Agreement” between Coca-Cola and the South Carolina Research  
188 Foundation, a non-profit entity that accepts donations for USC, to fund a study enti-  
189 tled “Energy Balance” in 2010–2015. Section “Discussion” of the agreement pro-  
190 vides that Coca-Cola can make non-binding suggestions and may only redact infor-  
191 mation covered by its confidentiality provisions in Section “Results”. According to  
192 Section “Results”, “Confidential Information” includes disclosures made “orally or  
193 in writing” pertaining to “technical or business information regarding the Sponsor’s  
194 products, marketing plans, public relations plans or Protocol”. Notably, this agree-  
195 ment empowers Coca-Cola to terminate the agreement with notice and to require the  
196 return or destruction of all of this Confidential Information. Specifically, Section 6.2  
197 states that, as long as 15 days written notice is given and with no need to give a  
198 reason:

199 6.3.4: SCRF shall immediately discontinue any work and shall take such pre-  
200 cautions as requested by Sponsor, including returning to Sponsor or certifying  
201 in writing to Sponsor that it had destroyed all documents and other tangible  
202 items containing Sponsor Confidential Information [13].

203 Other agreements contain provisions that do allow for recall of all research doc-  
204 ments and materials on termination. In the Church APEX study, detailed above, the  
205 termination provisions of this agreement are stronger, stating in Article 4.4 that:

206 Upon receipt of a notice of early termination, PBRC will immediately discon-  
207 tinue all work under this Agreement and return all copies of Sponsor data, or  
208 other materials, and deliver to sponsor all work in progress, including incom-  
209 plete work... [12]

210 Such termination provisions could, hypothetically, allow Coca-Cola to quash stud-  
211 ies progressing unfavourably, or allow Coca-Cola to pressure researchers using the  
212 threat of termination. However, we found no evidence that this has occurred in our  
213 FOI batches. In one instance, we did find Coca-Cola had ended a study with little or  
214 no information being sent to researchers or their institutions. For example, emails  
215 between researchers at USC pertaining to the Active Healthy Living Programme  
216 funded by Coca-Cola, state:



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217 As you know, the contract with Coca-Cola to develop and evaluate the  
218 Active Healthy Living Program has terminated. While I am not sure,  
219 because they have not communicated with us in several months, it appears  
220 that Coca-Cola has dropped the program. We put a lot into development of  
221 the program, and if possible, I would like to obtain/retain the intellectual  
222 property. Please look into where we stand with this, and let's figure out next  
223 steps. Thanks [19].

224 Our FOI, however, does indicate that Coca-Cola may be willing to negotiate the  
225 terms of agreements to moderate language regarding pre-publication communica-  
226 tion and consultation with Coca-Cola. In emails between University of Toronto Pro-  
227 fessor John Sievenpiper and Coca-Cola's Susan Roberts regarding a proposed, then  
228 signed, research agreement, Sievenpiper requests revision of provisions he regards  
229 as restrictive. The original text, which Sievenpiper requests to be deleted in its  
230 entirety, states:

231 U of T will afford TCCC [The Coca-Cola Company] the prior right to review  
232 and approve (or reject) any communication or other material developed by  
233 U of T or its employees, contractors or agents discussing this Agreement or  
234 the underlying grant, the related work or accomplishments of U of T and/or  
235 TCCC, or any related or other association between U of T and TCCC, or oth-  
236 erwise mentioning TCCC's name or displaying TCCC's trademarks [14].

237 Sievenpiper comments that it is "very restrictive for being an 'unrestricted grant'",  
238 and Coca-Cola agreed to change the wording to "consult with each other in good  
239 faith regarding any communication with third party/ies...". This involved significant  
240 back and forth emails and discussion, suggesting that the original wording may be  
241 standard wording in other Coca-Cola research agreements.

242 Assertion 2 Researchers are encouraged to publish and Coca-Cola does not have  
243 the right to prevent the publication of research results

244 Our research confirms that Coca-Cola encourages researchers to publish in peer-  
245 reviewed publications and generally only retains limited rights to delay publication  
246 to protect its proprietary interests or to obtain a patent. However, many agreements  
247 contain the above-discussed termination provisions, allowing either fixed-notice  
248 period termination, or early termination according to the agreement's terms (as  
249 described above), some restricting publication following such a termination.

250 For example, in the agreement pertaining to Church's APEX study, Article  
251 6.1, provided above in full, states that publication "*must be in a peer reviewed*  
252 *journal, must be approved in writing by both parties prior to such publication,*  
253 *and must acknowledge that the Study was funded by The Coca-Cola Company*".  
254 While this indicates that Coca-Cola does encourage publication as it states, and  
255 does not have a right to prevent publication, only providing comments, Article  
256 6.2 makes clear that Coca-Cola can issue a written notice to require a delay to  
257 publishing where its proprietary interests are at stake; but there is no general right  
258 to control publication of results unfavourable to Coca-Cola's commercial interests



259 [12.] The provisions do, however, convey a right of Coca-Cola to comment and  
260 prompt revisions, as discussed above.

261 Similar provisions are found in a “Research Agreement” between Coca-Cola  
262 and the South Carolina Research Foundation [13]. Section “[Discussion](#)” on “Pub-  
263 lication Rights and Use of Project Results” states similarly that Coca-Cola can  
264 require a delay where it wishes to file a patent or protect its proprietary inter-  
265 ests, and that such a delay should not exceed 120 days. Retention of a capacity to  
266 delay publication is consonant with ordinary industry-funded research provisions,  
267 but in public health research it may delay significant findings from reaching the  
268 public.

269 Notably, the APEX study agreement does not contain provisions that allow  
270 Coke to prevent publication absolutely, but does require written permission for  
271 publication of all peer-reviewed publications where such publication would be  
*prior to the final report to Coca-Cola* (Art 6.2). This, in concert with the ter-  
272 mination provisions that require cessation of research and the full and complete  
273 handover of all study documents, may enable Coca-Cola to shape unfavourable  
275 findings in advance of publication (Art 4.4). Thus, while Coca-Cola cannot stop  
276 publication, termination provisions could allow it to prevent publication through  
277 termination and recall of documents, along with the written consent requirement  
278 obligation in Article 6.2. Notably, this provision only has effect prior to the report  
279 to Coca-Cola, and thereby is not absolute in its effect. The agreements themselves  
280 are unclear as to the nature of the required reports and whether they will be made  
281 public and subject to peer review.

282 Assertion 3 Researchers are expected to disclose their funding sources in all publi-  
283 cations and public presentations of the data

284 We found that the agreements identified in our study routinely allow for the attri-  
285 bution that a study, paper or report was “funded by The Coca-Cola Company”.  
286 For example, Article 6.3 of the research agreement between Coca-Cola and the  
287 South Carolina Research Foundation states:

288 Publication shall acknowledge authorship according to generally accepted  
289 criteria for authorship and subject to journal requirements, if applicable.  
290 PBRC agrees that if Sponsor so requests, and only if Sponsor requests, sub-  
291 stantive releases and/or written reports contemplated by this Article 6 may  
292 include language to the effect that, “The Study was funded by The Coca-  
293 Cola Company” [13].

294 Notably, the phrasing “PBRC agrees that if Sponsor so requests, and only if  
295 Sponsor requests...” does not grant the University the right to use this attribution  
296 on all outputs. However, the peer-review provisions in Article 6 seem to imply  
297 that Coca-Cola expects the disclosure of funding sources in publications, as this  
298 is routine practice amongst reputable journals. The provision extends to publicity  
299 related to the research, placing the funding attribution within the hands of Coca-  
300 Cola rather than with the host or researcher. The contracts allow for a funding



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301 declaration to be phrased in a way that does not extend to a complete and detailed  
302 declaration of Coca-Cola's input into the research, although the agreements are  
303 silent as to whether more robust statements are allowed.

304 Assertion 4 Coca-Cola does not make funding conditioned on the outcome of the  
305 research

306 The research agreements contain no provisions on any outcomes of any study. How-  
307 ever, as noted above, this could hypothetically be exercised through the termination  
308 provision. Thus, while we found no direct conditions pertaining to outcomes of the  
309 research, the effect of permissive termination provisions and recall of data provi-  
310 sions could indirectly have a 'chilling effect' on researcher's work, influencing what  
311 researchers conclude. Past research has revealed that researchers do strive to main-  
312 tain positive relations with Coca-Cola and produce results favourable to them [20].

## 313 Discussion

314 Our review of Coca-Cola's research agreements reveals that it uses terms in line with  
315 standard funding agreements seen with other corporate actors. Specifically, these  
316 contractual agreements contain no provisions granting the company absolute control  
317 over the studies it funds, but they could allow it to assert influence over studies and  
318 resultant publications. We found that Coca-Cola requires regular reports and input  
319 into projects, and maintains the ability to terminate agreements early and without  
320 reason. Of course, in some cases such early termination provisions are justifiable;  
321 for example, when there is improper behaviour like harassment or bullying, a failure  
322 to deliver work in accord with the contract or the other such examples, which tend  
323 to be given as reasons for termination. In contrast, the contractual terms for early  
324 termination *without* reasons are arguably beyond the legal scope needed to address  
325 such justifiable concerns, although they are not uncommon in commercial agree-  
326 ments generally and there is no evidence of their use in our batch. In light of past  
327 evidence of 'soft influence', whereby researchers sought to please funders in ways  
328 which, albeit not contractually specified, in practice operated to the same effect, the  
329 company's continued input and early termination provisions undermine its public  
330 assertions of researcher independence [20].

331 Before interpreting the implications of our study for research, policy and improv-  
332 ing management of COIs, we must acknowledge several limitations. First, our case  
333 studies focused on Coca-Cola may not generalise to other segments of food and  
334 beverage industries. However, the contractual agreements appear to be commonly  
335 employed between private actors and public researchers. Second, several recipients  
336 of USRTK's FOI requests returned or did not respond to them, or, in some cases,  
337 they redacted material submitted. It is possible that we have been unable to detect  
338 contracts, which may have existed but were not obtainable through FOI, thus creat-  
339 ing an omission bias in our analysis. The direction of such bias, however, would  
340 likely be to hide particularly egregious contracts. Third, despite a large docu-  
341 ment set, we only identified five research contracts. There may be heterogeneity in



342 Coca-Cola's contracts with researchers given our observations that researchers could  
343 negotiate their terms. That said, there was relatively limited variation across the five  
344 agreements.

345 Our research reveals a need to improve reporting of COIs. Many declarations of  
346 funding and routinely employed COI statements fail to specify the true amount of  
347 input and influence Coca-Cola has (irrespective of whether it chooses to exercise it).  
348 While it is beyond the scope of our study to review all Coca-Cola funded research,  
349 we note that concerns have been raised elsewhere about the completeness of COIs  
350 in studies funded by Coca-Cola on topics of nutrition and physical inactivity [21].  
351 Examples include publications arising from the Energy Balance grant at USC state  
352 "*Supported by an unrestricted research grant from The Coca-Cola Company*" [22].  
353 Stephen Blair, one of the leads at USC, records that he has received funding from  
354 Coca-Cola, amongst others, in the preceding 5 years, as does co-author Gregory  
355 Hand. However, nowhere in the article is there a statement setting out the nature and  
356 amount of input Coca-Cola had, only that the funding was "unrestricted", which,  
357 as the email discussions between Coggins and Chandler indicate, was not how the  
358 grant was understood by USC. Coggins, as Director of Sponsored Award Manage-  
359 ment and Research Compliance at USC, makes clear the "*the Energy Flux and Bal-*  
360 *ance studies were conducted under the terms of Research Agreement with SCRF...*  
361 *[and] are not "un-restricted"...*" [17]. Such attributions of funding are similarly  
362 made with regards to the results of Timothy Church's APEX study, and are a reflec-  
363 tive example of the agreement provisions regarding funding statements across the  
364 agreements we received and resultant publications [23, 24].

365 Our research points to particular concerns about early termination provisions.  
366 The termination provisions in some of the agreements that allow Coca-Cola to  
367 discontinue the studies it funds if results are unfavourable, in contrast to the assur-  
368 ances it makes on its website about not being able to prevent publication, should be  
369 cause of concern. Although not all agreements we reviewed allow for full recall of  
370 research documents and materials, we identified several agreements that in effect  
371 allow Coca-Cola to terminate a study, if the findings are unfavourable to Coca-  
372 Cola. We observed push-back by researchers receiving unrestricted grants regard-  
373 ing restrictive provisions, revealing that the researchers were aware that there could  
374 be a problem. Coca-Cola was receptive to requested revision, but this may be due  
375 to the ongoing relationship the Company had with this particular researcher. Cer-  
376 tainly, some of the agreements allow for unfavourable developments or findings to  
377 be quashed prior to publication. Future research will be needed to identify when  
378 and the extent to which funded studies were not published. This is but one source of  
379 potential 'publication bias', whereby only positive results are made publicly visible.  
380 Given the hidden nature of unpublished, funded studies, this is an extremely chal-  
381 lenging area of research as there is no way for researchers to ascertain who produced  
382 the studies, why they remain unpublished and what their results may be.

383 We acknowledge that many provisions in Coca-Cola's research funding agree-  
384 ments are standard, including its early termination provisions. While recent ter-  
385 mination of a non-industry-funded United Kingdom study due to findings of bul-  
386 lying by a primary investigator evidences how these provisions may be exercised  
387 to encourage positive research environments [25], we note that early termina-



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388 may be used to discontinue studies in a less positive way. We found evidence that  
389 in at least one study Coca-Cola discontinued funding, seemingly without reason  
390 given to those involved, but found no evidence that this related to unfavourable  
391 findings or prospective publications. We did find evidence suggesting that Coca-  
392 Cola exerts influence on the design, conduct and write-up of studies, retaining  
393 rights to comment and have input throughout the research process.

394 Turning to implications for COIs, this study adds to a growing body of literature  
395 of their limited usefulness. Qualitative studies with researchers reveal diverse  
396 interpretations of what COIs and influence mean [26]. It is also easy for COIs to  
397 be inadequately reported. Most of what is detected comes to us through journalistic  
398 exposés [27]. Our study adds to these insights, showing that such general (and  
399 notably brief) declarations may fail to capture Coca-Cola's full involvement in the  
400 studies they fund, from design through to publication.

401 To remedy these weaknesses, we propose far more 'hard' information about  
402 funding, rather than relying on self-reports. Specifically, we call for journals to  
403 require authors receiving Coca-Cola or other industry financial support to pro-  
404 vide more robust COI and funding statements, including declaring the specifics  
405 of input allowed in the study's research agreements. In addition, journals should  
406 require authors of funded research to upload the research agreements for studies  
407 as appendices to any peer-reviewed publication, allowing these to be published  
408 with ease and at little expense on the existing electronic platforms where sup-  
409 plemental information is commonly provided. A reader's appraisal of a study's  
410 scientific objectivity would best be supported by knowledge that Coca-Cola has  
411 input at various stages of the research and publication processes, an understand-  
412 ing facilitated by access to the research agreement governing the study.

413 For medical and public health professionals, the lack of robust information on  
414 the details of input by industry and on studies terminated before results enter the  
415 public realm makes it impossible to know how much of the research that enters  
416 the public realm reflects industry positions and content, as opposed to fully  
417 unbiased and uninfluenced research results. It is critical that professionals and  
418 scholars be able to appraise influence. We know that people trust studies with an  
419 industry partner less and approach these studies with greater suspicion about bias  
420 [28]. Greater information is needed to appraise influence.

421 Where studies are terminated without having been registered in advance, as  
422 should be the case with clinical trials, it may be that termination acts as sup-  
423 pression of critical health information. We therefore call for industry funders to  
424 publish complete lists of terminated studies as part of their commitment to act  
425 with integrity, and for clear declarations of involvement as standard publication  
426 practice.

427

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432 **Data availability** All cited responses received to our Freedom of Information requests have been web-linked  
433 to allow the response to be read in full by all. The Freedom of Information responses are available online on the USRTK website and links have been provided to allow the individual FOI response  
434 referenced to be read in full. These are PDF copies of the documents we received in conjunction with the  
435 relevant state laws. There are no additional data to provide.  
436

## 437 **Compliance with ethical standards**

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